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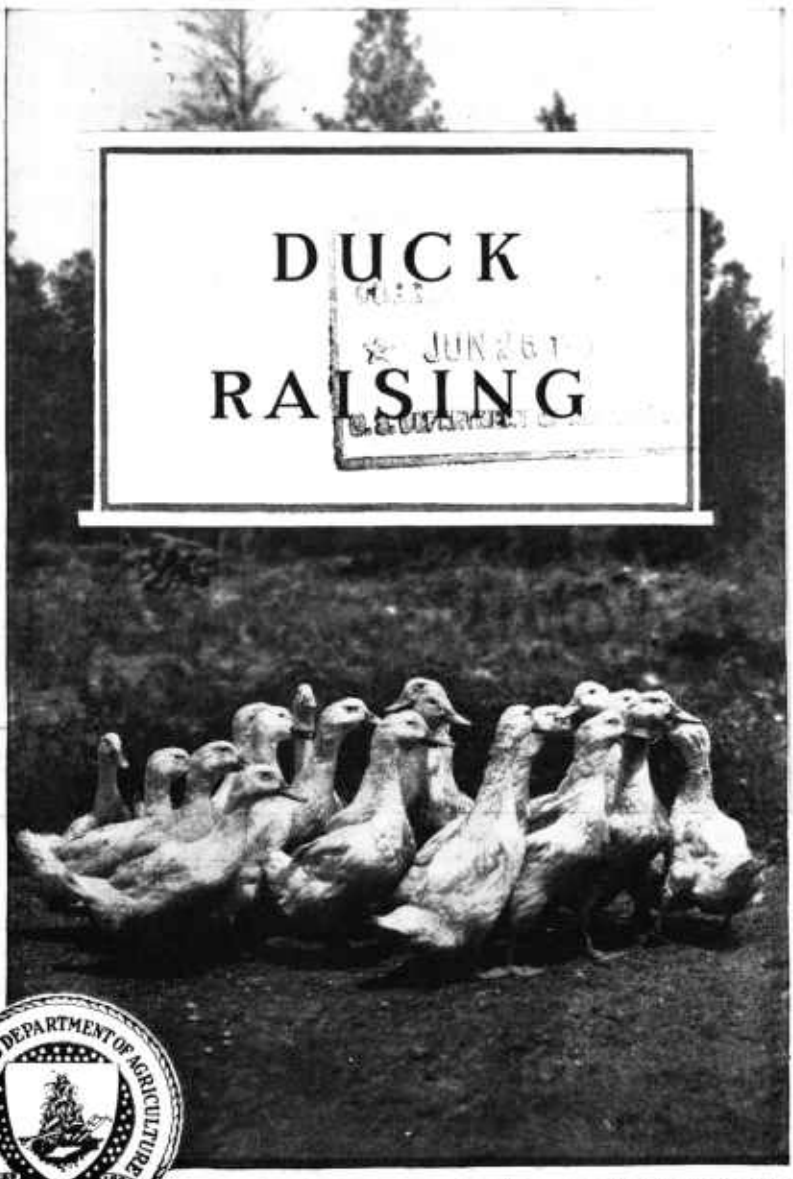

DUCK RAISING

DUCK RAISING is conducted successfully both as a side issue on general farms and as a special business on a large scale. The Pekin is the best breed for duck farming. Many breeds are very ornamental as well as useful, making the breeding of real interest wherever there are natural facilities for keeping waterfowl.

The rearing of ducks for market on a large scale requires extensive capital and experience. Young ducks forced for rapid growth and marketed at from 8 to 11 weeks of age are called "green" ducks. They weigh from 4½ to 6 pounds each and are the principal source of income on commercial duck farms.

A location on a stream of running water is essential for the best results in duck farming.

The market for ducks is usually limited to the larger cities, and the demand is not nearly so general as the demand for chickens, while the market for duck eggs is even more limited.

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DUCK RAISING

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NUMBER OF DUCKS IN THE UNITED STATES

ACCORDING to the Federal census of 1950, the number of ducks produced has changed very little in the last 20 years. During this period, two other kinds of poultry raised for meat, turkeys and commercial broilers, have increased very rapidly. The 1950 census shows that 10,342,364 ducks were raised in the United States in the preceding year. The 1940 census reported 12,138,820 and the 1930 census, 11,337,487 ducks raised.

New York produced 4,217,000 ducks in 1949, which is over 40 percent of the total production for the country. The following States each produced over 400,000 ducks: New York, California, Illinois, Massachusetts, Michigan, Pennsylvania, and Wisconsin. The number of ducks produced on commercial duck farms in the States of New York, Massachusetts, Michigan, and California show an increase but the numbers in small farm flocks decreased. Relatively large numbers of small flocks are produced on farms in the North Central States. In 1949, 5 times as many turkeys as ducks were produced, and 50 times as many broilers as ducks. Conditions are favorable for commercial duck-raising on Long Island, N. Y. An extensive trade in frozen ducks has been built up; the birds are marked Long Island ducks and are shipped to many sections of the country. The number of ducks kept in proportion to the total population is much lower in the United States than in most other countries. The relative number in Great Britain, Ireland, and New Zealand is several times larger than in this country. Duck products in this country are consumed largely by the foreign-born population.

BREEDS OF DUCKS

There are 11 standard breeds of ducks which have been admitted to the American Standard of Perfection. These breeds may be divided into three classes: (1) the meat class, including the Pekin,

Aylesbury, Muscovy, Rouen, Cayuga, Buff, and Swedish; (2) the egg class, represented by the Runner; and (3) the ornamental class, composed of the Call, the Crested White, and the Black East India. Many farms in the South and the Middle West keep ducks of mixed breeding, which are generally small sized, poor layers, and undesirable types of market duck. Except the Muscovy, all our economic breeds of ducks are said to have originated from the wild Mallard.

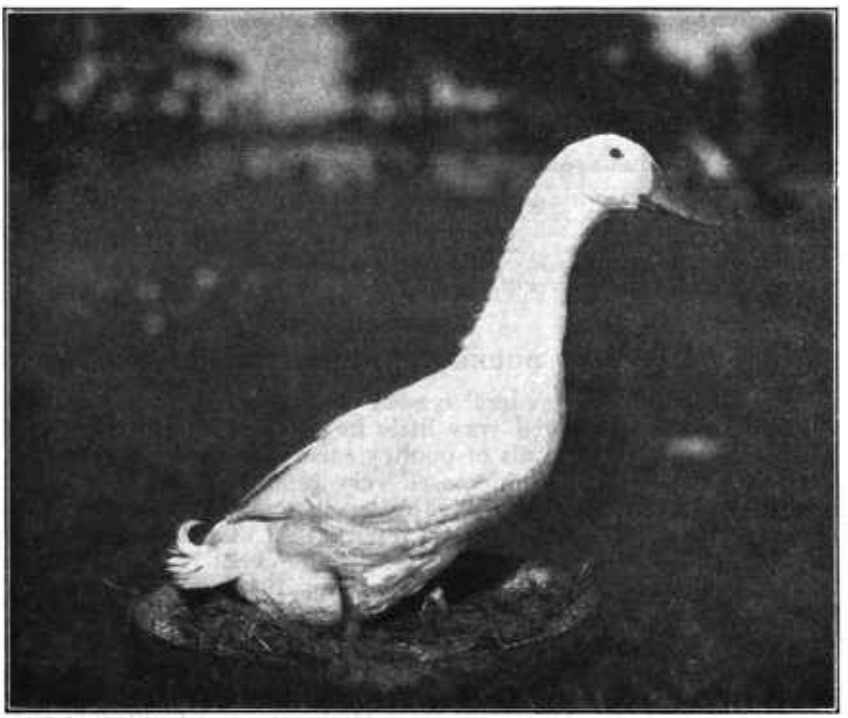

FIGURE 1.—Pekin drake.

THE MEAT CLASS

THE PEKIN

The Pekin is almost the only breed kept by American commercial duck farmers who make a specialty of producing "green" ducks; it is also the most popular breed on general farms. Green ducks are ducklings which are grown rapidly and marketed at from 8 to 11 weeks of age, when they weigh about 4½ to 6 pounds apiece. If not sold at that time the market quality of their flesh depreciates, their weight decreases, and it takes several weeks to get them back into good market condition.

The Pekin duck (fig. 1) originated in China and about 1873 was introduced into this country, where it soon became the most popular breed on commercial duck farms. With very few exceptions all the Pekins in this country are descended from about 20 ducks. The

introduction of the Pekin, which was soon followed by the use of artificial incubation, practically marks the beginning of intensive commercial duck farming in the United States. A duck of this breed has a creamy-white plumage, a long, broad, and deep body, with a full breast and deep keel (the part extending backward from the breast). The color of the skin is yellow, the shanks and toes should be reddish orange, and the bill orange yellow, free from black. Standard weights of the adult drake and duck are 9 and 8 pounds, respectively. The Pekin combines utility and beauty to a high degree, and the ducks kept on the commercial farms are very uniform. They are hardy, are fair layers, practically nonsitters, and are especially adapted for the production of flesh. They are timid and easily

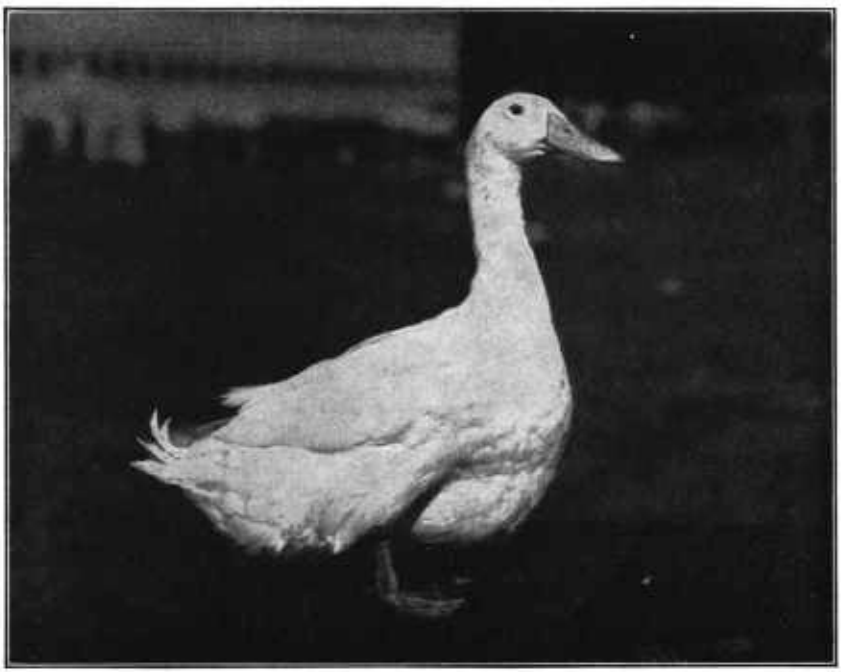

FIGURE 2.—Aylesbury drake.

frightened, very docile, easily confined by low fences, and well adapted for either commercial duck farming or as a side issue on general farms.

THE AYLESBURY

The Aylesbury duck (fig. 2) is a native of England, in which country it is much more popular than the Pekin. It is a large, white duck having the same standard weights and general type as the Pekin, but its body carriage is nearly horizontal. This breed resembles the Pekin in many ways, but has never become popular in this country, although it was used before the introduction of the Pekin. The Aylesbury ducks kept in this country seem to be less hardy and vigorous than the Pekins, but are adapted for use on either commercial

duck farms or general farms. The breed has pure white plumage, whereas in the Pekin it is creamy white.

THE MUSCOVY

There are two standard varieties of Muscovy ducks, the white and the dark. This breed originated in South America and is thought to be a different species from the other ducks in the United States, although it may be crossed with domestic varieties of ducks, producing hybrids which are sometimes fertile. The head and face of the Muscovy (fig. 3) are partly bare, with red, rough, carunculated skin. It has a long, broad body, with greater breadth but less depth and less keel development than the Pekin. The drake should be at least one-third larger than the duck, as the standard weight of the adult

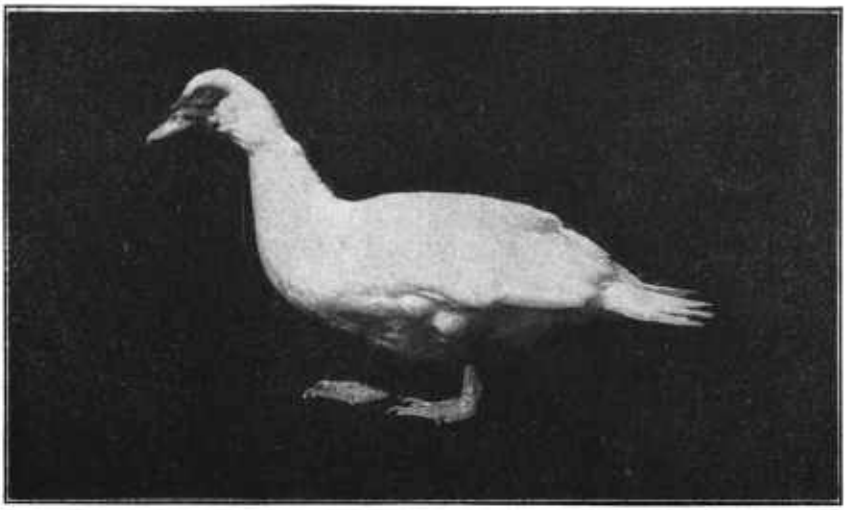

FIGURE 3.—White Muscovy drake.

drake is 10 pounds and that of the duck 7 pounds. The white variety has pure white plumage, pale orange or yellow legs, and a pinkish, flesh-colored beak. The breast, body, and back of the dark Muscovy are a lustrous blue black, broken with some white. The wing coverts are also a lustrous blue black with splashes of white, and the tail is black. The bill is pink, shaded with horn, and the legs may be yellow or a dark, leaden color.

Muscovy ducks are not well adapted for commercial duck farming, as they are only fair layers, and they are not well suited for marketing because of the difference in size of the duck and the drake. Moreover, they are good fliers and can readily fly over ordinary poultry fences. However, the breed is a wide forager, requires very little care, is not so noisy as the Pekin, and can be kept with fair success on general farms.

THE ROUEN

The Rouen duck (fig. 4) derives its name from the city of Rouen, in northern France, and was probably derived from a similar type of common or native duck by selection. In shape and type this breed is similar to the Pekin, and it has the same size and standard weights. The eyes are dark brown, and the head and upper part of the neck of the male are green, with a white ring around the neck, while the back is gray mixed with green near the neck, shading into a lustrous green near the tail. The lower part of the body is gray, and the breast is claret colored. The tail and wings are gray and brown,

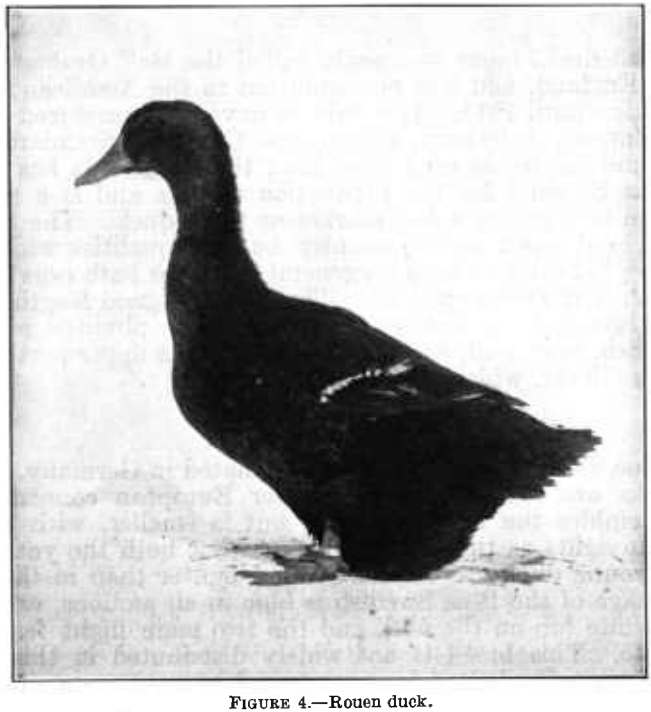

FIGURE 4.—Rouen duck.

mixed with some green, while the wings have a wide, purple bar with narrow, white bars on each side of the purple, which are exposed when the wing is folded. The shanks and toes are an orange or orange-brown color. The duck is barred on the wings similarly to the drake, but the color of the plumage of her body is brown, with penciling in all sections. This breed has very handsome markings but does not make so desirable a market duck as the Pekin or Aylesbury, as it does not mature so quickly, and besides has dark-colored pinfeathers. It is not adapted to conditions of commercial duck farming, but is suitable for use by the fancier or by the general farmer.

THE CAYUGA

The Cayuga duck derives its name from Cayuga County, N.Y., where it probably was developed about 1850. It resembles the Pekin in shape, but the standard weight is 1 pound lighter. The Cayuga is a good market duck, but it is not widely distributed, and, because of its dark plumage, it is not so good a market duck as the Pekin. The Cayuga duck is a fair layer and may be raised with success on general farms. The plumage is a greenish black in all sections of the body, except that the drake may have brown flight feathers; the eyes are dark brown; and the shanks and toes are black or dark slate color.

THE BUFF

The Buff duck, more commonly called the Buff Orpington, originated in England, and was not admitted to the American Standard of Perfection until 1915. It is said to have been produced by crossing the Runner, Aylesbury, Rouen, and Cayuga. Standard weights are 1 pound lighter in each class than the Pekin. It has been developed in England for the production of eggs and is a good producer, and also makes a fair market or table duck. The breed has not been bred much in this country but has qualities which would make it a good duck to keep on general farms for both eggs and meat production if it were improved. The Buff has good length of body, which is broad, deep, and well rounded. The plumage is an even shade of rich, fawn buff, except the head and the upper portion of the neck in the drake, which should be seal brown.

THE BLUE SWEDISH

The Blue Swedish duck probably originated in Germany, although blue ducks are found in several other European countries. The breed resembles the Pekin in type, but is smaller, with the same standard weights as the Cayuga, except that both the young drake and the young duck are one-half pound lighter than in that breed. The plumage of the Blue Swedish is blue in all sections, except that it has a white bib on the neck and the two main flight feathers are pure white. This breed is not widely distributed in this country and is not so well adapted for commercial purposes as a white duck; however, it is a fair variety for use on general farms.

THE EGG-LAYING CLASS

THE RUNNER

The Runner, commonly called the Indian Runner, received its name from its supposed introduction from East India, but the evidence appears to show that it is a selected type of a duck which was common in Belgium and Holland. There are three standard varieties of Runner ducks—the Fawn and White, the White, and the Penciled. The Fawn and White is fawn or gray and white, with a white neck and a line of white running up to the eyes and extending around the bill. The back and shoulders are fawn, and the

upper part of the breast and wings are fawn, but the lower part is white. The breast is full; the body is long and narrow, sloping gradually into the neck, and is carried erect, with no indication of a keel, the body resembling somewhat that of a penguin in shape. The shanks and toes are orange-red, and the bill of the young drake is yellow, later becoming greenish-yellow, while a young duck has a yellow bill spotted with green, which later becomes a dull green.

The plumage of the White variety (fig. 5) is pure white in all sections. The bill is yellow and the shanks and toes are orange. The color of the Penciled variety (fig. 6) resembles that of the Fawn and White except that the head of the male is a dull, bronze-green

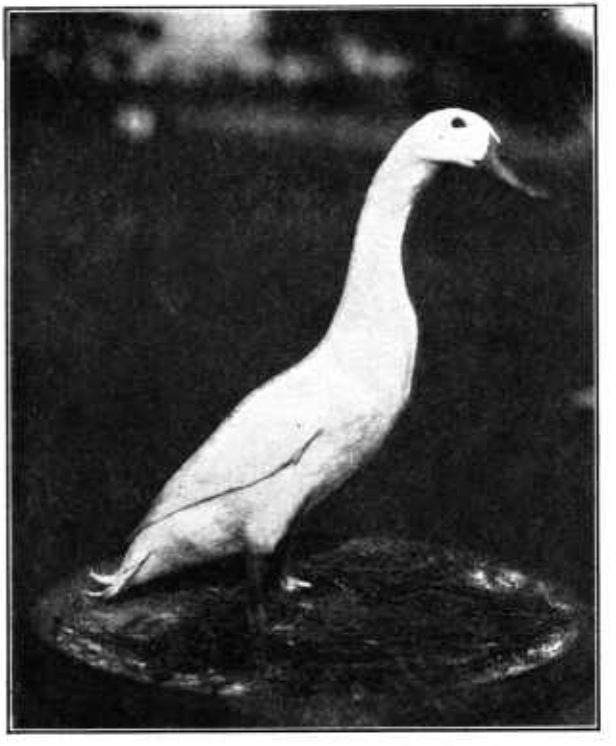

FIGURE 5.—White Runner drake.

and white and the back has a soft, fawn ground, finely stippled with a slightly darker shade of fawn. The body and the upper section of the breast are medium fawn and the tail is a dull, bronze-green. The head of the female is a medium fawn and white, while the white markings in the plumage resemble those of the male. The colored markings are a medium fawn throughout, with a light line of fawn color running around the edge of each feather, the border being a darker shade.

The Runner duck is much smaller than breeds of the meat type, the adult drake having a standard weight of 4½ pounds and the duck 4 pounds. A few years ago the merits of this breed were advertised

extensively, and the number of Indian Runner ducks increased rapidly for a few years, but this greater rate of increase did not last. They are among the best layers of all the American standard breeds of ducks and hold the same relative position in the duck family that the Leghorn does among the breeds of chickens. This breed lays a good-sized white egg considerably larger than a chicken egg. Runner ducks are active, are good foragers, nonsitters, and hardy. Their skin is yellow, and they make fair broilers, weighing from 2½ to 3 pounds each at about 6 weeks of age. They are not adapted for the production of large green ducks, but may be kept to produce ducklings of broiler size. The Runner ducks have made excellent records in the egg-laying contests, both in this country and abroad.

FIGURE 6.—Penciled Runner drake.

The Runner is a good breed for the general farmer and is one of the best for the production of market eggs. Opportunities to keep ducks for the production of eggs for market appear to be rather limited in this country.

Runner, Buff, and Khaki-Campbell ducks have proved to be good egg producers. The Khaki-Campbell is now included in the American Standard of Perfection. These ducks will produce well for three or four years, and the record the second year is often as high as the first year. If the production of duck eggs for market is considered, special attention should be given to procuring ducks which have been bred for egg production. The business of the production of duck eggs for market is discussed in the latter part of this bulletin, under "Marketing duck eggs."

THE ORNAMENTAL CLASS

THE CALL

There are two varieties of Call ducks, the Gray and the White. They are the bantams of the duck family, are kept for exhibition or for fancy purposes and are used as decoys in wild-duck shooting. This breed is said to be especially good for decoys when crossed with the wild Mallard or with the common duck. The Gray Call has the color markings of the Rouen and closely resembles the wild Mallard. The plumage of the White Call is pure white. Ducks of this breed have no standard weights, but are bred and selected for small size.

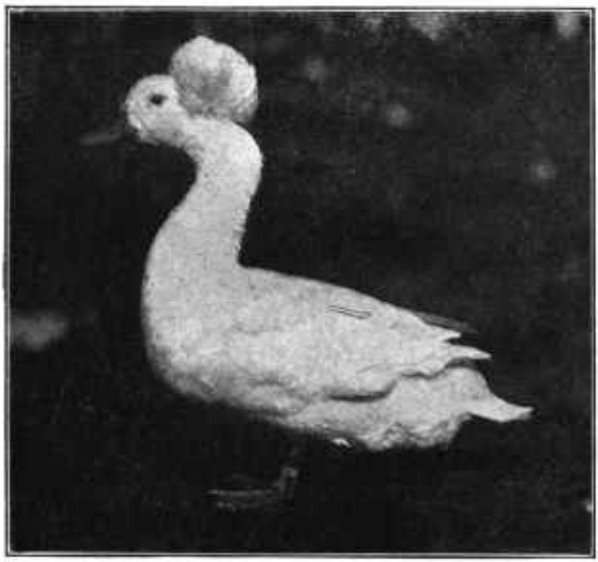

FIGURE 7.—Crested White drake.

THE CRESTED WHITE

The Crested White is a white ornamental duck of medium size and has a crest (fig. 7). The standard weights are a pound less than those of the Cayuga duck.

THE BLACK EAST INDIA

The Black East India duck is of practically the same size and type as the Call duck and is kept entirely for ornamental purposes. The plumage is a deep black, with a brilliant, greenish tint. This duck is very shy and does not breed well in confinement. Crested White and the Black East India ducks are somewhat rare in this country.

THE MANDARIN AND THE WOOD

The Mandarin and the Wood, or Carolina ducks, which are the most ornamental of the small breeds of waterfowl, are not included

in the American Standard of Perfection. The plumage of these breeds is handsomely marked and contains several brilliant colors. Both varieties are commonly kept in parks and zoological gardens with other ornamental waterfowl.

DUCK FARMING

Duck raising on a large scale has been developed as a special business to a considerable extent on Long Island (fig. 8) and in sections within easy shipping distance of New York City, Boston, and Philadelphia. A location with either good railroad or good truck shipping facilities to a nearby large city where ducks are in demand is essential for a large duck farm. Large flocks of ducks are very noisy, and require a somewhat isolated location. Intensive duck farming on a large scale has been more successful than intensive chicken raising, as Pekin ducks, especially, stand confinement well, are more

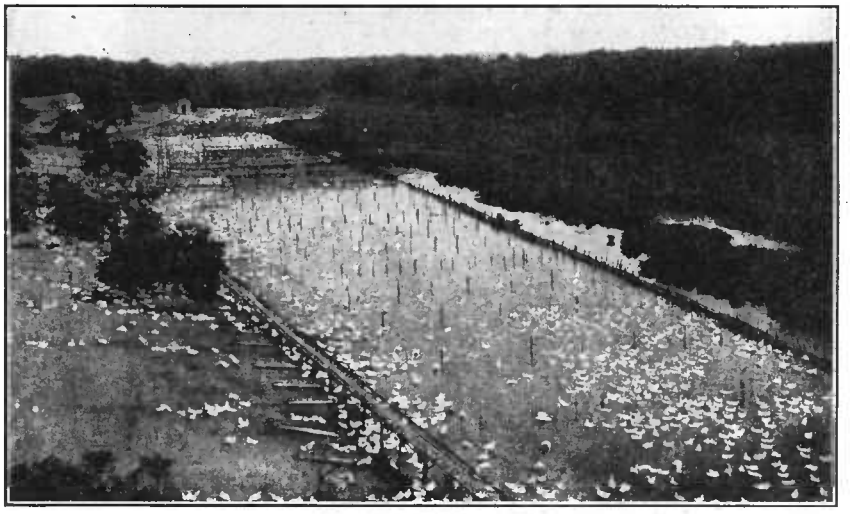

FIGURE 8.—Large duck farm on Long Island.

easily brooded, and are less subject to disease than chickens. Artificial methods of hatching and rearing and labor-saving machinery have been used very successfully on duck farms.

The demand for table ducks at good prices is mostly limited to a few large cities and is not nearly so general as the demand for chickens or fowls. The demand, however, appears to be gradually increasing, but the lack of a wide market materially influences the establishment and growth of duck farms. It would be possible to build up sufficient trade in most of the larger cities, especially in those containing a considerable percentage of foreign-born population, to take the product of one good-sized duck farm. The market conditions should be studied carefully before a large investment in ducks is made. The rearing of ducks for market on a large scale is a business requiring capital and extensive experience. Practical experience on a large duck plant is the best teacher, but the novice should begin in a small way and enlarge as experience justifies.

Ducks can be raised with success and at a profit on general farms, but are not so well adapted as fowls to supply a source of income under average farm conditions, although they serve to add variety of both meat and eggs for the farmer's table. Breeds of ducks which are of good, marketable, table quality and also are fair egg producers, are best suited for use on general farms and may be kept profitably wherever good pasture land with running water is available. The Pekin, Rouen, and Cayuga are the best breeds for this purpose, while the egg breeds, such as the Runner, may be profitable breeds to keep on many farms. Their house should be near the water, and the site should be fenced sufficiently to keep livestock away. Farmers rarely give the necessary care to their ducklings in either feeding or marketing to be able to cater to the trade in fancy green ducks.

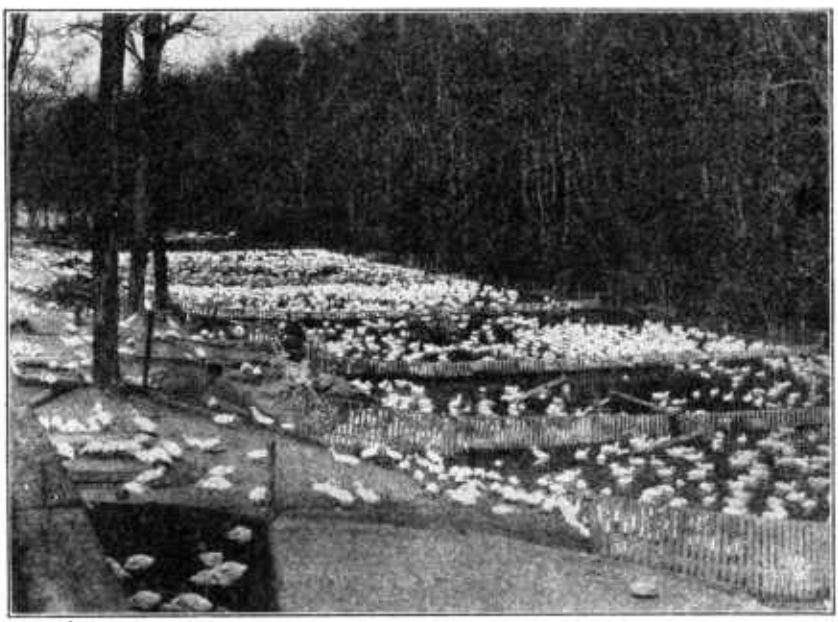

FIGURE 9.—Duck yards extending into water.

SITUATION AND ARRANGEMENT

The most desirable situation for a duck farm is on a light sandy soil with a gentle southern slope, leading to a stream, as shown in figure 9, so that the pens for the breeders can be extended 25 feet or more into running water, as the fertility of the eggs is better, as a rule, if the ducks have access to water. A natural supply of water is almost essential for commercial duck farming and lessens the labor. The arrangement of the buildings should be planned to economize labor and allow for increase of the equipment. The necessary buildings consist of breeding pens, an incubator cellar, brooder houses, fattening sheds, and places for storing and mixing feed and for killing and picking the ducks. The pens in the houses, the outside yards, and the arrangement of the buildings should be planned

so that the ducks may be easily driven from house to house. The feed room or house should be centrally located.

Considerable machinery for mixing feed is used on all large duck farms, and most of these farms have tracks for feed trucks, pushed by hand, to facilitate the moving of feed to the different houses and yards. Convenient watering arrangements are essential where large numbers of ducks are kept, as ducks require a large quantity of drinking water. Plenty of shade should be provided for all the ducks. Although they may be kept successfully under very intensive conditions, it is advisable to allow considerable yard space. Double yards, which may be rotated and planted to quick-growing crops, such as oats, wheat, and rye, are good for intensive duck farms.

Most of the Long Island duck farms have sandy yards which are cleansed by the rise and fall of the tide. All duck yards should be made on gently sloping land. The yards must be kept clean, which

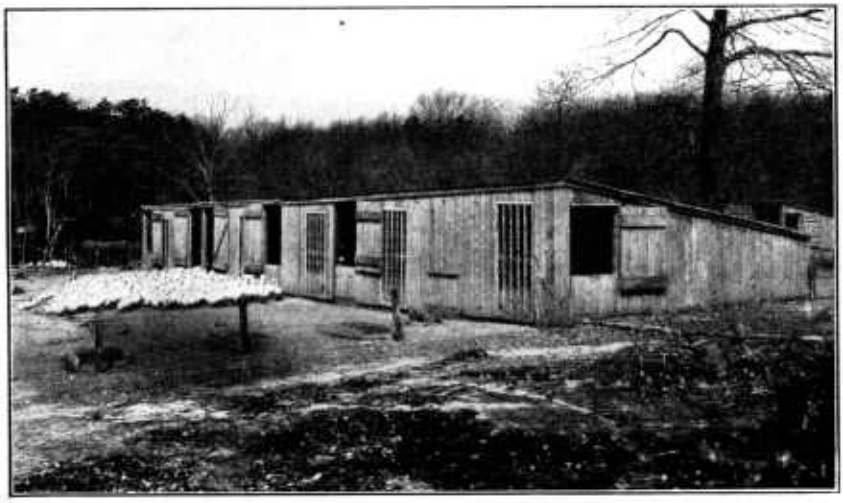

FIGURE 10.—Flock of breeding ducks and breeding house.

may mean scraping off the top surface of some yards. Enough land to raise green feed and to utilize the manure produced should be available. Ducks for market are allowed in the water in mild weather, after they are 6 to 7 weeks old, and when about 8 weeks in cold weather. This saves much labor in watering and helps to keep the young ducks in good condition and the feathers clean.

HOUSES

The site of the poultry houses should be dry, well drained, and higher than the general level of the land. A light, porous soil is best. A shed-roof breeding house, 18 feet deep, 32 feet long, 8 feet high in front, and 5 feet in the rear, provides desirable quarters and will hold from 100 to 125 breeders. It is desirable to allow from 4 to 6 square feet of floor space for each breeding duck (fig. 10). Breeders are kept in flocks of from 75 to 250, although from 100 to 150 is

the usual number. The number and size of the openings and the ventilation in the laying house should be adapted to the climate. The houses illustrated are on Long Island. About one-third of the front consists of glass windows and of space for muslin curtains, in equal proportions. A glass window in the east end and one in the west end help to ventilate and dry out the house on mild days. Ventilation is of vital importance, as the comfort and health of the ducks depend on an abundant supply of pure, dry air. A dirt floor from 4 to 6 inches above the ground level is satisfactory on light, well-drained soil. Board floors may be used if raised 6 to 8 inches above the ground and covered with 4 inches of sand or dry earth.

The breeding pens should be bedded with additional straw or shavings whenever the litter gets wet and soiled. The litter may be allowed to accumulate in cold weather as it helps to keep the ducks comfortable. This practice, however, makes good ventilation absolutely necessary. During the day, except in stormy and cold weather, all the windows should be opened wide to allow the bedding to dry. Nests are usually provided. They are made like stalls, 12 inches wide and 18 inches deep, separated with boards about 12 inches high. The partition boards are nailed to a strip about 5 inches high, which forms the front of a row of nests placed against the back or side of a building. Some breeders provide no nests, but allow the ducks to lay on the floor. The yards should be about 100 feet long and the width of the pen, and extend 30 feet into the stream if possible. Wire poultry netting about 2 feet high will keep mature ducks in their respective yards, and netting 18 inches high will hold ducklings.

BROODER HOUSES

Long brooder houses heated by hot-water-pipe systems are used, as shown in figure 11, when ducks are raised on a large scale. A single brooder house should face the south, and double brooder houses should face east and west. There should be a glass window for each pen in the brooder, so arranged that it can be easily opened to admit direct sunlight. A shed-roof house, about 12 feet deep, 6½ feet high in front, 4½ feet in the rear, and as long as is desired, makes a good single brooder house (fig. 11).

Double brooder houses are the more generally used and usually have gable roofs with sides about 5 feet high and the ridge 8 feet high. The hot-water pipes run through the center of the building, four on each side of the partition that runs through the center of the house. Over these pipes is a platform under which the ducks hover, and also used by the attendant as a walk (fig. 12). No cloth cover is used in front of the pipes except in severe weather, when burlap bags may be hung there. Such a double house is about 24 feet wide, and each pen is divided into sections 5 to 6 feet wide and 10 feet long, including the run under the pipe. Each section will take care of 100 to 150 ducklings. Each partition should be about 1 foot high and so arranged that part of the partition in each pen can be removed in order to drive the ducks from one pen to the other. The heating pipes are nearer the floor in one end of the house and gradually rise

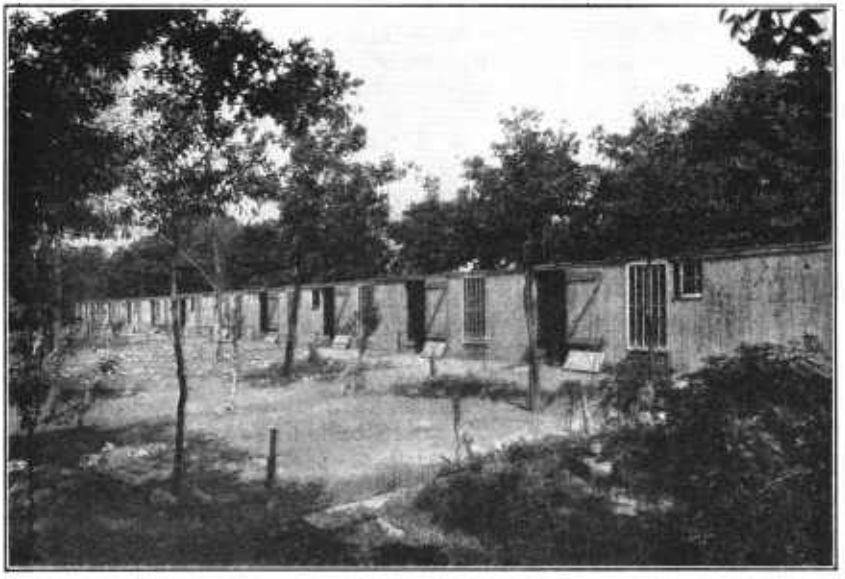

FIGURE 11.—Brooder house for raising ducks on a large scale.

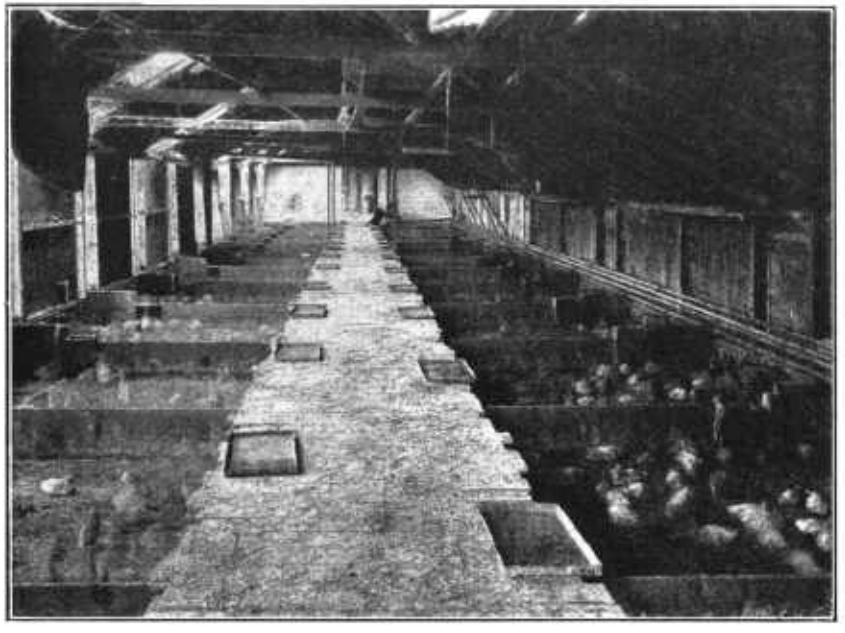

FIGURE 12.—Interior of duck brooder house, showing feeding pans in center. Hot-water pipes and hover are in the center of the house, under the board walk.

toward the farther end of the building, to accommodate ducklings of different ages. The smallest ducklings are kept where the pipes are nearest to the floor, or about 3 inches above their heads, and as the birds grow and need less heat they are moved to pens where the pipes are higher.

A second brooder house about 24 feet deep is used with pipes placed much higher from the floor of the pen in order to accustom the ducks to less heat before they are transferred to the fattening sheds. The pens in the second brooder house are 12 to 15 feet wide, and will accommodate from 100 to 150 ducklings until they are 5 to 6 weeks old.

When the ducklings are about 6 weeks old and well feathered they are transferred to inexpensive fattening sheds along the water. Good

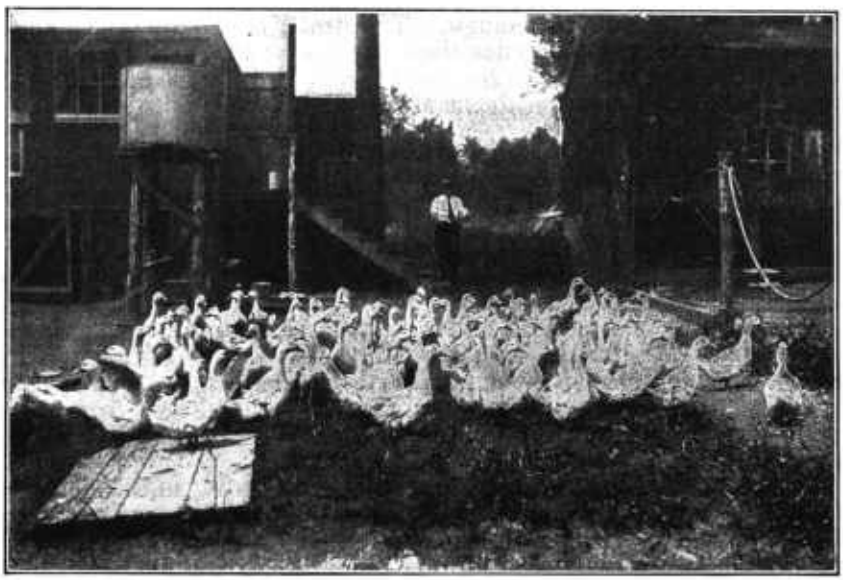

Figure 13.—Breeding flock of Pekin ducks.

judgment is required in making this transfer, as early hatched ducklings need artificial heat much longer than do late hatched ducklings. After the feathers on their backs are partly grown they need no shelter except shade from the hot sun. About 300 ducks are placed in each fattening yard, which is about 100 by 150 feet and extends into the water about 50 feet. Here the ducks have a chance to swim and to clean their plumage.

SELECTING AND MATING

The selection of large, vigorous breeding ducks that have broad, deep bodies, is essential to success in duck farming. The breeding stock is usually selected from the market ducks when they are from 8 to 10 weeks old. The drakes are selected during June and the females during the early part of July. Only the most vigorous and best-developed ducks are saved for breeding (fig. 13). These ducks are kept only during their first laying season and are then marketed.

Older ducks do not lay eggs enough during the early part of the winter to produce sufficient numbers of market ducks, but a few of the best birds are sometimes kept for breeding stock.

Breeding ducks kept for the production of young ducks for market should lay about 120 eggs each during the hatching season, which begins in December and extends through May or into June. Ducks lay their eggs early in the morning and should be confined to the house or pen until 9:30 a.m. If allowed to roam early in the morning they may lay in a pond or stream and the eggs may be lost. Dim artificial lights may be provided in the breeding pens as a means of keeping the ducks contented. In handling ducks pick them up by their necks rather than by the legs, which break easily. During cold weather 16 drakes may be mated to 100 ducks, while in mild weather 14 to 15 drakes will be enough. The drake is usually coarser and more masculine in appearance than the duck and has a distinct curl in his tail feathers. Three hundred female breeders should produce upwards of 10,000 market ducks a year.

INCUBATION

Twenty-eight days is the period of incubation for duck eggs other than those of the Muscovy breed which require 33 to 35 days. The eggs may be hatched either naturally or artificially. On all the large duck farms the hatching is done in incubators. Incubators should be operated in a well-ventilated room or cellar about two thirds of which is below the ground level, so that the temperature remains fairly even. The cellar should be from 7½ to 8½ feet high, with plenty of windows above the ground level for light and ventilation. Good, fertile eggs must be used and can be obtained only from stock that is properly mated and kept under the best possible conditions for health and vigor.

Pekin and Runner ducks rarely sit; consequently, unless an incubator is used, the eggs are usually hatched under hens. Duck eggs if dirty should be washed when they are collected, since washing does not appear to injure their hatching qualities. Hens hatching duck eggs must be well cared for as the period of incubation is a week longer than that of chicken eggs. Ducklings usually take from 24 to 48 hours to hatch after they pip the shells; therefore it is advisable to allow the hen to leave the nest for feed and water when the first ducklings pip the shell and then confine her to the nest until after the hatching is over. Duck eggs need more moisture at hatching time than do chicken eggs, as it takes the ducks much longer to get out of the shells. The eggs, therefore, should be sprinkled with warm water just before the ducklings are ready to pip.

The incubator should be perfectly level and should be operated for a few days before the eggs are put in. The bulb of the thermometer should just clear the top of the eggs; with the bulb in this position the temperature should be 102.5° F. for the first week, and 103° from then until hatching, when it may be allowed to reach 103.5°. Cabinet forced-draft incubators are operated at a temperature of from 99° to 99.5°. These machines have automatic humidity control. Duck eggs require much more moisture than hen eggs.

Incubators designed for hatching duck eggs may be obtained from the incubator manufacturers, but when only a few eggs are to be hatched the regular chicken-egg machine may be used. Follow the manufacturers' directions in operating the incubator. The eggs are usually turned twice each day from the third to the twenty-fifth, inclusive, but if the incubator has an automatic turning device, it pays to turn the eggs at least three or four times daily. The eggs are usually cooled daily from the tenth to the twenty-fourth day, inclusive, except in cabinet incubators. Eggs that have become overheated can be cooled quickly by being sprinkled with cold water.

It is usually advisable to supply moisture for duck eggs after the tenth day of incubation, but this depends on the make of the incubator, on the climate, and especially on the humidity of the place where the incubator is operated. Many methods are used in supplying moisture in incubation, such as sprinkling the eggs with water heated to about 100° F., or placing a pan of water, a receptacle containing moist sand, or a wet sponge below the egg tray. Other common methods are sprinkling or soaking the floor of the incubator room or, if the incubator is small, placing a pail of warm water under the lamp.

Shut the incubator tightly when the ducklings begin to pip, close the ventilators, and do not open the machine until the hatching is over. If the tray is too crowded with ducklings, ventilators may be opened when the hatch is two thirds off, but the doors should not be opened. When all the ducklings are hatched, remove the egg tray, open the ventilators, and keep the incubator door open slightly. Allow the ducklings to remain in the incubator from 24 to 36 hours at a temperature of 90° F. without feeding. When taking the ducklings to the brooder house, keep them well covered to guard against chilling.

TESTING EGGS

Duck eggs are tested by candling once or twice during incubation, and the infertile eggs and those with dead germs are removed. Dead germs in duck eggs decompose rapidly and are often detected by their appearance and odor. Infertile eggs, boiled hard, may be fed to the ducklings. If eggs are tested only once the testing is usually done a few days before the eggs are ready to hatch. If two tests are made the first is made on the fifth or sixth day and the second about the twenty-fourth day. Both the condition of the embryo and the size of the air cell are considered in testing.

Testing should be done in a dark room. An infertile egg held large end up before the tester looks perfectly clear, much the same as a fresh egg, whereas a fertile egg shows a small, dark spot—the embryo—with a network of small blood veins extending in all directions if the embryo is living; if the embryo is dead the blood settles away from it toward the edge of the yolk, forming in most cases an irregular circle of blood, known as a blood ring. The eggs containing strong, living embryos are dark and partly filled by the twenty-first day, and show a clear, distinct line of demarcation between the air cell and the growing embryo, whereas dead germs show only partial development and lack this clear, distinct outline.

BROODING

Ducks are easier to brood artificially than chickens, and on duck farms artificial methods are used exclusively. The ducklings are removed from the incubator from 24 to 36 hours after hatching, taken to the brooder house (fig. 12), and then given their first feed. From 100 to 150 ducklings are placed in a pen 6 by 12 feet. A board across the pen allows the ducklings to wander only 2½ to 3 feet from the brooder pipes during the first three or four days. If ducklings are raised under hens, it is advisable to confine the hens and allow the ducklings free range, as the hens are apt to wander too far with their broods.

The temperature under the hover should be from 90° to 95° F. for the first week, 80° to 85° the second week, and about 75° the third week and until the ducklings are removed to the second brooder house, where the temperature under the hover is kept at from 65° to 70°. When about 6 weeks old the young ducks are moved from the second brooder house to the fattening shed, which has no artificial heat. This change may be made at a little earlier age in the warmer months and a little later in the colder months. The temperature at which to keep the hover depends on the climate and the weather. Brooder-house pens should be bedded with straw or shavings; they should be cleaned out about every 10 days and fresh straw placed in them. During the winter, after the ducks are 10 days to 2 weeks old, they are usually allowed out of the brooder house whenever the weather is good.

To keep the ducklings in the pens more contented, artificial lighting is provided all night. This lighting also increases feed consumption. Lights are also used in the fattening yards.

FEEDING

The principal part of all duck rations is fed as a wet mash, usually mixed in dough mixers or in good-sized mixing machines. For breeding ducks a light feed of whole corn is ordinarily used with the mashes. All duck rations are mixed with green feed or with cooked vegetables substituted for the green feed. Green feed consists of creek grasses, alfalfa, clover, young corn, rye, cowpeas, or any other available green feed, cut up—usually with a machine—in lengths of about one half inch. Rye is one of the first green feeds available in the spring and is followed by alfalfa and oats and then by fodder corn. Rape may be sown in August for late feeding and is usually available until freezing weather. Alfalfa-leaf meal may be used in the mash, and if no green feed is available, cooked vegetables may be used at the rate of one fifth of the mash. Commercial duck feeds are quite commonly used for starting the growth of the ducklings and are also used for older ducks by many growers.

Ducklings are usually fed as soon as they are put in the brooder houses. For the first 5 days they should have a moist mash consisting of 35 percent yellow cornmeal, 31 percent bran, 10 percent flour or middlings, 5 percent alfalfa-leaf meal, 5 percent dried milk, 5 percent meat scrap, 5 percent rolled oats, 3 percent sand, and 1 percent salt. One percent of cod-liver oil should be mixed with

this mash, the oil being mixed with not more than 2 weeks' supply of the feed at one time.

Commercial duck pellets, which save labor in feeding, are used extensively for feeding ducks. These pellets, sold as starter, growing, breeder, and fattening pellets, are fed dry in troughs or open hoppers.

The ducklings are usually fed all they will clean up, four times daily, until they are 2 to 3 weeks old, and then three times daily until they are marketed. Sand or grit should be kept before them at all times. When they are 2 to 3 weeks old the mash may be replaced by one consisting of 45 percent cornmeal, 24 percent bran, 10 percent flour, 10 percent meatmeal, 5 percent ground oat groats, 3 percent ground limestone, 2 percent dried milk, and 1 percent salt. Green feed to the amount of 10 percent of the mash, by bulk, should be added to the ration when the ducklings are at this age, and the cod-liver oil omitted. When the ducklings are about 6 weeks old, or when they are well feathered (fig. 14), they should have a fattening ration of 50 percent cornmeal, 18 percent bran, 13 percent flour, 12 percent meatmeal, 5 percent ground oats, and 2 percent dried milk, with 10 percent of the bulk of the mash, in green feed, added.

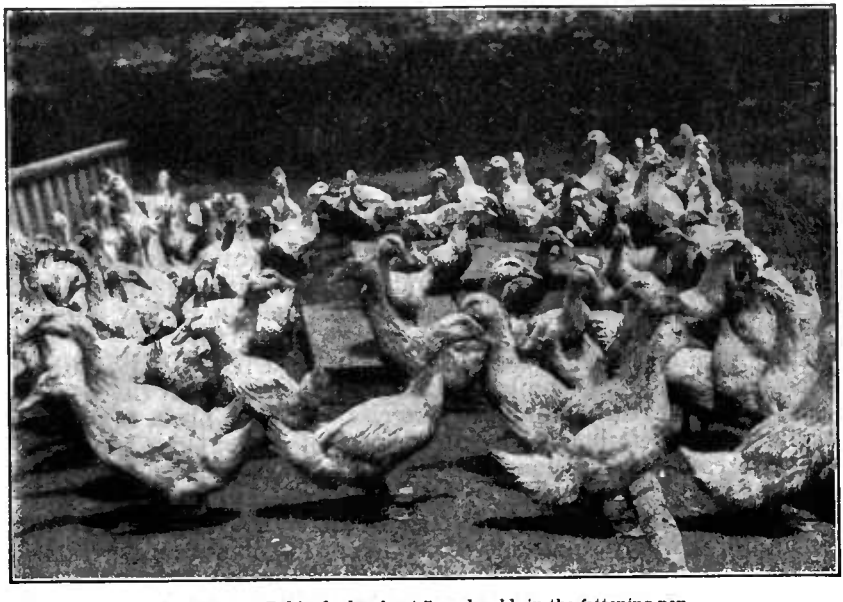

FIGURE 14.—Pekin ducks about 7 weeks old, in the fattening pen.

The ducks to be used as breeders are separated from the market ducks during June and July, as has been stated. They are then fed a bulky mash containing very little meat scrap. A good mash for breeders may include 40 percent bran, 30 percent yellow cornmeal, 25 percent middlings or low-grade flour, and 5 percent meat scrap or fishmeal. This mash is mixed with about one third its bulk in green feed. About October 15 the meat scrap or fishmeal is increased to about 12 percent of the mash, the maximum quantity desirable in a

laying ration for breeders. At this time the cornmeal also is increased, making the mash consist of 50 percent yellow cornmeal, 25 percent bran, 13 percent middlings or flour, and 12 percent meat scrap or fishmeal.

Another good laying ration for breeding ducks consists of 45 percent yellow cornmeal, 20 percent bran, 10 percent middlings, 10 percent flour, 10 percent meat scrap, and 5 percent oatmeal or ground oats mixed with green feed.

The breeding ducks should be given all they will eat twice daily, in the morning and at night. The feed should be wet enough to hold together when it is squeezed, in a condition somewhere between stickiness and crumbliness, but it must not be crumbly. Oyster shell and sand should always be kept before the breeding or laying ducks.

In feeding the Runner or egg breeds for the production of market eggs the meat scrap in the laying rations may be increased to about 15 percent, and the quantity of green feed reduced. Such breeds are fed laying rations throughout the year. Another good ration for laying ducks producing market eggs is a mash of 25 percent yellow cornmeal, 25 percent low-grade flour or middlings, 20 percent bran, 15 percent ground oats, and 15 percent meat or fishmeal. This mash is fed with a grain mixture of equal parts of wheat and corn. A good laying ration may be made up of mash alone containing 40 percent cornmeal, 25 percent flour or middlings, 15 percent bran, 10 percent ground oats, and 10 percent meat or fishmeal. About 10 percent of alfalfa-leaf meal should be added to either of these rations if no green feed is used.

If it is necessary to confine the ducklings to the brooder house all or most of the time in the winter, 2 percent of cod-liver oil should be added to the mash, and if little direct sunlight is available some cod-liver oil may be added to the ration, but should be omitted for at least two weeks before the ducks are marketed, as it may affect the flavor of their flesh.

Ducklings are usually fed mash on flat feed boards with laths for sides. Feed troughs should be kept near the water in the fattening pens to reduce the amount of exercise that the birds take. Feed should not be left before the ducks until it sours, since sour feed is likely to cause convulsions and death, especially among the young ducklings.

In the brooder house, ducklings should have water before them constantly. Many duck raisers use fountains placed on wire screens that are slightly raised and the floor area underneath is enclosed, so that the surrounding straw or bedding will not become wet. For older ducks plenty of drinking water is essential and should be near the feed so that the ducks can eat and drink at about the same time. Water fountains should be deep enough to allow the ducks to get their bills into the water and wash sand or grit out of their nostrils. Cement troughs in each yard, about 6 inches wide and 2 inches deep, containing running water, are ideal for watering ducks.

PREPARING DUCKS FOR MARKET

Green ducks are usually marketed when 10 weeks old, but the marketing age ranges from 8 to 11 weeks, according to the condition of the birds, their weight, and the season of the year (fig. 15). In the New York market preference is given to ducks weighing about 5½ pounds each. Well-grown ducks will weigh about 5½ pounds at 11 weeks of age. It takes from 4 to 4½ pounds of feed per pound of weight (dressed) to grow a duck for market.

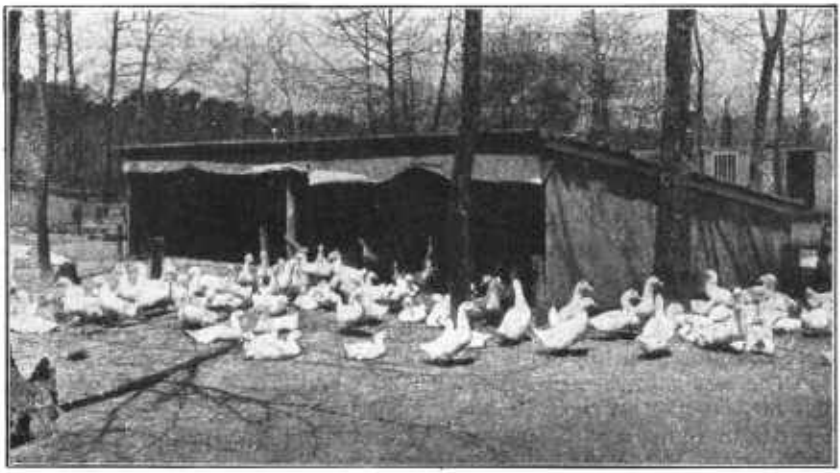

FIGURE 15.—Ducks being fattened for market and housed in an open-shed shelter.

Most ducks are sent to the city markets dressed, but some markets, especially that in New York City, handle a large number of live ducks. There is usually a considerable loss of weight in marketing ducks alive. Green ducks should not be held after the long wing feathers have reached their full length, as the birds reach their best condition at that time. A V-shaped trap made of panels of fence, into which the ducks are driven, saves much handling of the ducks.

Ducks to be slaughtered are usually hung up by their feet in a row and the jugular vein in the throat just below the base of the skull is cut through the mouth, or the bird is stuck in the neck. Before it is killed the duck may be stunned by a hard blow on the head. A blood can or a weight is hooked through the mouth, and the feathers are plucked. Ducks are usually scalded or steamed, but dry-picked ducks are preferred in some cities. The water for scalding should be just below boiling, as water that is too hot discolors the flesh; the ducks should be scalded just as soon as they are through bleeding. Clean picking, except for a few feathers on the neck, is recommended, although leaving the long tail feathers and part of the wing feathers on the bird is still a common practice on Long Island. Long pinfeathers usually are removed with a dull knife, and the down is rubbed off with the moistened hand or shaved off with a very sharp knife. On large duck farms it is common practice to hire pickers for dressing the ducks during the marketing season. The average duck

picker can pick from 75 to 125 ducks in a day. For each man killing ducks about 24 helpers are needed to pick the birds. Each duck yields about 2½ ounces of marketable feathers which help to pay for the picking. Feathers may be dried by spreading them out in thin layers in a loft, and should be turned several times until they are thoroughly dried.

After the ducks are scald-picked they are usually washed and put into ice or cold water to cool and "plump". They are usually packed in barrels and sent to market either with or without ice, depending on the weather and the distance from market. When ice is used each layer of birds is packed flat, usually with the keels or breasts down. A layer of crushed ice is placed on the bottom of the barrel; on this is put a layer of dressed ducks, and alternate layers of ice and ducks are added until the barrel is nearly full; then the barrel is filled with a layer or header of ice. Boxes also are used in some sections for shipping dry-packed ducks. Dressed ducks should be graded according to their size and thoroughly chilled before they are packed in barrels or boxes.

Market prices for ducks are usually highest from November through March and lowest in May or June. Wholesale prices of the best grades of dressed frozen ducks on the New York market averaged 36.7, 30.8, and 31.2 cents a pound for the years 1949, 1950, and 1951 respectively. Average monthly prices varied very little throughout 1951, ranging from 30 cents in June to 33.4 cents in December. In 1950 the low month was May with 26.1 cents and January was high with 36.7 cents. Prices in 1949 varied from 28.3 cents in May to 51 cents in February, prices being unusually high during that winter. When prices in the spring and summer are low, many ducks are held in cold storage for higher prices.

MARKETING DUCK EGGS

The demand for duck eggs is limited and not nearly so general as the demand for chicken eggs. There is a good demand for duck eggs about Easter in New York and other cities at prices usually several cents a dozen higher than chicken eggs, but during the rest of the year duck eggs do not bring higher prices than chicken eggs, although they are about one-fourth larger. The best grades of duck eggs averaged, around Easter, for the years 1929–32, about 53 cents a dozen in New York City. However, this top price usually lasts for only a few weeks and the 4-year average for May for the same years was only 29 cents, or 3 to 4 cents a dozen more than the price of the best grades of chicken eggs. In some markets a trade is gradually being established for fancy duck eggs produced on nearby farms, but the demand is very limited. Pure-white eggs are preferred and usually bring the highest price. Duck eggs should be marketed frequently, as they depreciate in quality more rapidly than do chicken eggs, especially during hot weather. The market for eggs should be carefully investigated by those who intend to raise the egg-laying type of ducks.

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